

What is claimed is:

1. A method for providing a soft clip on a signal comprising the steps of
5 providing a current input signal value,
establishing threshold values defining a clip region,
comparing the current input signal value to the clip region,
10 calculating, if the current input signal value is within the clip region, the
dV/dt values for current and previous input signal values, and
establishing, in response to the dV/dt value, a smooth clip signal value.
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2. The method of claim 1 further including the step of resetting a clip length
counter.
3. The method of claim 2 wherein the resetting step further includes
20 incrementing a clip event counter.
4. The method of claim 1 further including the step of substituting the smooth
clip signal value for the current input signal value.
- 25 5. The method of claim 1 further including the step of determining whether the
compare step has previously established that the current input signal value
is within the clip region.
6. The method of claim 5 further including the steps of
30 branching if the determining step shows that the current input signal value
was previously within the clip region, and
in response to the branching step, using the previous dV/dt value to
35 establish a new smooth clip signal value.

7. The method of claim 6 wherein the new smooth clip signal value is established in accordance with a look-up table value.
8. The method of claim 6 wherein the new smooth clip signal value is established by calculation.
9. The method of claim 6 further including the step of incrementing the clip length counter.
10. The method of claim 6 further including substituting the new smooth clip signal value for the current input signal value.
11. The method of claim 6 further including
- buffering the current input signal value,
- inserting in the buffer the new smooth clip signal value in place of the current input signal value, and
- extracting from the buffer the appropriate signal value.
12. A method for providing a soft clip on a signal comprising the steps of
- establishing a sequence of input values in accordance with an input signal,
- buffering the sequence of input values by a predetermined amount,
- determining, for a given input value, whether that input signal causes clipping,
- substituting, for those input values which cause clipping, a smooth clip signal,
- inserting the smooth clip signal into the sequence in place of the corresponding input value, and
- establishing a sequence of output values in accordance therewith.

detecting when a next input value in the sequence will be outside the clip region,

modifying a predetermined number of the prior output values to provide a smooth transition between the smooth clip signal and the next input value in the sequence which will be outside the clip region.

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16 The method of claim 15 wherein a first input value in the sequence of input values exceeds a first threshold, and the next subsequent input value exceeds a second threshold, where the first threshold is either upper or lower.

17. The method of claim 16 wherein the upper and lower thresholds are positive and negative, respectively.

18. The method of claim 16 further including the step of

detecting a transition wherein a first input value exceeds the first threshold and the second input value exceeds the second threshold,

discontinuing the substituting step associated with the first input value,

establishing a new substituting step associated with the second input value.

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detecting when a next input value in the sequence will be outside the clip region,

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detecting when a next input value in the sequence will be outside the clip region,

modifying a predetermined number of the prior output values to provide a smooth transition between the smooth clip signal and the next input value in the sequence which will be outside the clip region.

detecting when a next input value in the sequence will be outside the clip region,

15 modifying a predetermined number of the prior output values to provide a smooth transition between the smooth clip signal and the next input value in the sequence which will be outside the clip region.

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after the discontinuing step, modifying a predetermined number of the prior output values to provide a smooth transition between the smooth clip signal and the next input value in the sequence which will be outside the clip region.

25 30. The method of claim 29 wherein dV/dt values are used for the modifying step.

31. The method of claim 29 wherein the dV/dt values are determined from the current input sample and the previous input sample.

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32. The method of claim 28 wherein dV/dt values are used for the modifying step.

33. The method of claim 32 wherein the dV/dt values are determined from the
35 current input sample and the previous input sample.

